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Photographs taken with the new 70-foot combination of the Crossley reflector, in the ordinary blue and violet light, and also on orthochromatic plates, using a greenish-yellow color screen, show that the star images which have been formed by yellow light are much smaller than those formed by the ordinary blue and violet light. Similarly, photographs of the Moon and planets are sharper in yellow than in blue light.

Extension of this reasoning points to the deep red part of the spectrum as being favorable for the production of still smaller images and better definition. In photographic work on bright objects, such as the Sun, Moon, and the brighter stars and planets, the use of light of great wave-length is entirely practicable.

A consideration of *visual* definition seems to point to an analogous effect there, although to a less degree, owing to the greater wave-lengths to which the eye is most sensitive.

A detailed account of the experiments already concluded, as well as some still in progress, will be published shortly in a *Lick Observatory Bulletin*.

C. D. PERRINE.

Mt. HAMILTON, CAL., December 5, 1908.

#### EIGHTEEN STARS WHOSE RADIAL VELOCITIES VARY.

In the progress of the work with the three-prism Mills spectrograph at Mt. Hamilton, and of the D. O. Mills Expedition to the southern hemisphere, eighteen stars have recently been found to have radial velocities which vary, on account of the gravitational influence of an invisible but massive companion in each system, except that in case of one star, *70 Ophiuchi*, a well-known visual double star, the companion is visible. A list of these stars, with data concerning their positions, number of observations, total range of observed velocities, and discoverers of the variations, is given below. Only in the case of *70 Ophiuchi* is the revolution period known,—in that case eighty-eight years. Detailed data concerning the observations are contained in a *Lick Observatory Bulletin* now in press.

294 *Publications of the Astronomical Society, &c.*

Star.	R. A.	Dec.	Type.	Observed in.	No. of Obs.	Velocity.	Discoverer.
$\gamma$ <i>Persei</i>	2 <sup>h</sup> 57 <sup>m</sup> .6	+ 53° 7'	G	1897 to 1908	11	— 2 to + 7 <sup>km</sup>	MOORE.
$\xi$ <i>Tauri</i>	3 21 .8	+ 9 23	A	1903 to 1908	5	— 62 to + 36	CAMPBELL.
$\theta_2$ <i>Tauri</i>	4 22 .9	+ 15 39	A	1903 to 1908	6	+ 17 to + 74	MOORE.
$\iota$ <i>Eridani</i>	4 33 .6	— 14 30	I	1900 to 1908	6	+ 33 to + 43	MOORE.
$\zeta$ <i>Aurigæ</i>	4 55 .5	+ 40 56	K	1898 to 1908	7	$\pm$ 0 to + 25	WRIGHT.
$\rho$ <i>Orionis</i>	5 8 .1	+ 2 45	I	1902 to 1908	6	+ 33 to + 50	MOORE.
$\zeta$ <i>Can. Maj.</i>	6 16 .5	— 30 2	B	1906 to 1907	12	+ 11 to + 38	PADDOCK.
$\beta$ <i>Can. Maj.</i>	6 18 .3	— 17 54	B	1904 to 1908		+ 27 to + 41	ALBRECHT.
$\nu$ <i>Puppis</i>	6 34 .7	— 43 6	B	1904 to 1908	8	+ 20 to + 35	WRIGHT.
$\tau$ <i>Puppis</i>	6 47 .4	— 50 30	K	1903 to 1907	6	+ 30.4 to + 40	CURTIS.
$\sigma$ <i>Velorum</i>	8 37 .4	— 52 34	B	1904 to 1908	11	+ 10 to + 27	CURTIS.
$\delta$ <i>Carinæ</i>	8 38 .5	— 59 24	B	1907	6	+ 38 to + 72	
$\eta$ <i>Velorum</i>	10 10 .6	— 41 37	A	1904 to 1907	4	— 2 to + 25	PADDOCK.
$\nu^2$ <i>Draconis</i>	17 30 .3	+ 55 14	A	1902 to 1908		— 23 to — 4	ALBRECHT.
$\gamma$ <i>Ophiuchi</i>	18 0 .4	+ 2 32	K	1897 to 1908	8	— 10 to — 7	
$\iota$ <i>Herculis</i>	18 42 .6	+ 18 4	A	1902 to 1908	6	— 26 to — 64	WRIGHT.
$\phi$ <i>Cygni</i>	19 35 .5	+ 29 56	I	1907 to 1908	4 <sup>1</sup>	$\left\{ \begin{array}{l} \pm 0 \text{ to } - 24 \\ \pm 0 \text{ to } + 30 \end{array} \right\}$	PLUMMER. CAMPBELL.
$\nu$ <i>Octantis</i>	21 30 .4	— 77 50	K	1904 to 1907	8	+ 27 to + 36	WRIGHT.

W. W. CAMPBELL.

<sup>1</sup> Two components visible.

December 7, 1908.

#### APPOINTMENTS.

Mr. E. A. FATH, Fellow in the Lick Observatory, has been appointed Assistant in the Solar Observatory of the Carnegie Institution, dating from July 1, 1909. W. W. CAMPBELL.

Director W. W. CAMPBELL, of the Lick Observatory, has been invited to give the Silliman Lectures in Yale University for the academic year 1909-1910. The course will consist of ten lectures, dealing with the results of Professor CAMPBELL's work in measuring the radial velocities of stars by means of the spectroscope and the solution of several fundamental problems of astronomy as based upon these motions. The lectures will probably be given in the fall of 1909. J. H. MOORE.